CLAIMS

1. A composite power amplifier including

a first and a second power amplifier (16, 18) connected to an input signal over an input network and to a common load over an output network; and

means in said input network for driving both power amplifiers to produce

(1) first output current components having an amplitude that increases linearly with increasing output signal amplitude below a predetermined transition point and decreases monotonically with increasing output signal amplitude above said transition point, and

(2) second output current components having an amplitude that increases linearly with increasing output signal amplitude both below and above said transition point.

2. The amplifier of claim 1, including phase shifting elements in said output network (21) generating different phase shifts from each power amplifier output to said common load.

3. The amplifier of claim 1 or 2, including means (28, 38) for driving both power amplifiers to produce first output current components having an amplitude that increases linearly with increasing output signal amplitude below said predetermined transition point.

4. The amplifier of claim 1 or 2, including amplifiers and phase shifters (26, 32) for maximizing output power.

5. The amplifier of claim 1 or 2, including means (28, 38) for maximizing power amplifier efficiency.

6. The amplifier of claim 1 or 2, including filtering means (40) for canceling nonlinearity in the output signal.

7. A Chireix type composite power amplifier including

a first and a second power amplifier (16, 18) connected to a common load over an output network; and

phase shifting elements in said output network (21) generating different phase shifts from each power amplifier output to said load, thereby eliminating the need for compensating reactances.

8. The amplifier of claim 7, wherein said phase shifting elements comprise different length transmission lines.

9. A method of driving a composite amplifier output network including phase shifting elements generating different phase shifts from each power amplifier output to a common load, said method including the step of driving said output network in different operating modes in different frequency bands.

10. A method of driving a composite power amplifier including a first and a second power amplifier connected to an input signal over an input network and to a common load over an output network, said method including the step of driving both power amplifiers to produce

(1) first output current components having an amplitude that increases linearly with increasing output signal amplitude below a predetermined transition point and decreases monotonically with increasing output signal amplitude above said transition point, and

(2) second output current components having an amplitude that increases linearly with increasing output signal amplitude both below and above said transition point.

11. The method of claim 10, including the step of generating different phase shifts from each power amplifier output to said common load.

12. The method of claim 10 or 11, including the step of driving both power amplifiers to produce first output current components having an amplitude

that increases linearly with increasing output signal amplitude below said predetermined transition point.

13. The method of claim 10 or 11, including the steps of amplifying and phase shifting drive signals to said power amplifiers for maximizing output power.

14. The method of claim 10 or 11, including the step of adjusting drive signals to said power amplifiers for maximizing power amplifier efficiency.

15. The method of claim 10 or 11, including the step of filtering drive signals to said power amplifiers for canceling nonlinearity in the output signal.

16. The method of claim 10 or 11, including the steps of independently

amplifying and phase shifting drive signals to said power amplifiers for maximizing output power;

adjusting drive signals to said power amplifiers for maximizing power amplifier efficiency; and

filtering drive signals to said power amplifiers for canceling nonlinearity in the output signal.

17. A radio terminal including a composite power amplifier, which includes

a first and a second power amplifier (16, 18) connected to an input signal over an input network and to a common load over an output network; and

means in said input network for driving both power amplifiers to produce

(1) first output current components having an amplitude that increases linearly with increasing output signal amplitude below a predetermined transition point and decreases monotonically with increasing output signal amplitude above said transition point, and

(2) second output current components having an amplitude that increases linearly with increasing output signal amplitude both below and above said transition point.

18. The terminal of claim 17, including phase shifting elements in said output network (21) generating different phase shifts from each power amplifier output to said common load.

19. The terminal of claim 17 or 18, including means (28, 38) for driving both power amplifiers to produce first output current components having an amplitude that increases linearly with increasing output signal amplitude below said predetermined transition point.

20. The terminal of claim 17 or 18, including amplifiers and phase shifters (26, 32) for maximizing output power.

21. The terminal of claim 17 or 18, including means (28, 38) for maximizing power amplifier efficiency.

22. The terminal of claim 17 or 18, including filtering means (40) for canceling nonlinearity in the output signal.

23. A radio terminal including a Chireix type composite power amplifier, which includes

a first and a second power amplifier (16, 18) connected to a common load over an output network; and

phase shifting elements in said output network (21) generating different phase shifts from each power amplifier output to said load, thereby eliminating the need for compensating reactances.

24. The terminal of claim 23, wherein said phase shifting elements comprise different length transmission lines.
